

RESEARCH PROBLEM STATEMENT #PA-504

I – Problem Title

An Evaluation of the Crack, Seat and Overlay Method in California

II – Research Problem Statement

A common rehabilitation approach in California during the 80's and 90's was the "crack, seat and overlay" method. Several hundred miles of Portland Cement Concrete (PCC) highways were rehabilitated using this method. Now that they are approaching ten years of age, an evaluation of their performance is needed to determine future practices.

III – Objective

The objective of this study is to evaluate the performance of the "crack, seat and overlay" method for rehabilitating pavements. Failure modes will be identified and performance models will be developed.

IV – Background

The "crack, seat and overlay" method has been the standard practice for rehabilitating older PCC pavements since the 1980's. Little data has been collected to determine the performance of this technique. Performance models are necessary to develop life-cycle costs. This will allow for comparison when evaluating rehabilitation strategies.

Caltrans' current pavement management system does not have section information so determining sections that have used this method will require going through construction records and verifying with field data (e.g., cores). The Office of Pavement Rehabilitation will provide a good starting point for identifying potential sections.

Once sections have been identified and verified a pavement condition evaluation will be conducted. The Office of Roadway Rehabilitation (Maintenance) may be able to provide historic pavement condition and International Roughness Indices (IRI).

Once the condition data is collected performance models can be developed. These models will then provide the necessary information to create life-cycle costs and thus allow for comparison of other methods.

V – Statement of Urgency and Benefits

The "crack, seat and overlay" method is the standard practice for PCC pavement rehabilitation, but has little data to support its use. Having life-cycle costs will allow Caltrans to evaluate various rehabilitation strategies and apply the most cost-effective ones. In FY04 Caltrans spent \$400 M on rehabilitating pavements.

VI –Related Research

The Pavement Performance Evaluation research project (phase 1 is complete and phase 2 is beginning) is getting physical data on pavement sections. The information gained from phase 1 (around 900 sections) could be used to help identify sections for this study.

The Partnered Pavement Research Center (PPRC) is beginning a study to identify sections for eventual use in a Pavement Management System. It will be using non-destructive techniques to determine section properties (e.g., thickness, AC vs. PCC, etc.) and could provide techniques to identify cracked and seated PCC.

Finally, there is a Department-wide effort in developing a Pavement data enterprise, of which a Pavement Management System (PMS) would evolve. A key component will be identifying section properties in order to group common pavement sections. It plans to use the results from the PPRC study to establish pavement section, statewide.

VII – Deployment Potential

The results of this study would provide the Office of Pavement Rehabilitation a tool for determining the best strategy for rehabilitating PCC pavements. Additionally, non-destructive techniques for identifying cracked and seated PCC would be available for establishing a state-wide PMS.